



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/532,673

04/26/2005

Michihiko Takase

2005_0642A

8711

52349 7590 05/21/2009
WENDEROTH, LIND & PONACK L.L.P.
1030 15th Street, N.W.
Suite 400 East
Washington, DC 20005-1503

EXAMINER

BURKHART, ELIZABETH A

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

05/21/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/532,673	Applicant(s) TAKASE ET AL.	
	Examiner Elizabeth Burkhart	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21, 27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21, 27 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 21, 27, and 28 are pending in the application. Amended claims 21 and 27, cancelled claims 22-26, and new claim 28 have been noted.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/8/2009 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 27 is rejected under 35 U.S.C. 102(b) as being anticipated by Shintani (JP 11-080952).

Shintani teaches an apparatus for depositing an MgO film for manufacturing a plasma display panel, the apparatus comprising: a deposition room, a gas introducing means for introducing oxygen gas (nozzle), an exhausting means (pressure control valve), a partial pressure detecting means for detecting partial pressure of the oxygen gas (mass spectrometer), a vacuum degree detecting means (vacuum meter), and a

Art Unit: 1792

controlling means for controlling the amount of oxygen gas introduced to said deposition room (mass flow controller) and for controlling the amount of exhausting gas (pressure computing unit) based on information from the partial pressure detecting means and vacuum degree detecting means [0002], [0004]-[0006]. It is inherent that the oxygen gas of Shintani suppresses oxygen deficiency in the MgO film as evidenced by [0025] of Okuyama et al (JP 2001-243886).

Shintani discloses every limitation of claim 27 since the claim only requires the gas introducing means to introduce at least one of a first gas containing oxygen gas and a second gas including water vapor, hydrogen, carbon dioxide, or carbon monoxide. In this case, Shintani discloses a gas introducing means to introduce a first gas containing oxygen gas.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 21 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shintani (JP 11-080952) in view of Okuyama et al (JP 2001-243886), Kawakusu et al (JP 2000-277009), and Furuya (JP 09-295894).

Shintani teaches a process for forming an MgO film onto a substrate of an AC type plasma display panel [0002] comprising: controlling a vacuum degree in the deposition room within a certain range, introducing oxygen into the deposition room,

Art Unit: 1792

and controlling a partial pressure of the oxygen gas introduced to said deposition room within a certain range (Abstract). The oxygen partial pressure is kept within a certain range by controlling an amount of oxygen introduced into the deposition room while the deposition room is exhausted [0004].

Shintani does not teach introducing another gas including at least one gas selected from the group consisting of water vapor, hydrogen, carbon monoxide, and carbon dioxide; the partial pressure of the oxygen gas; or the partial pressure of the another gas.

Okuyama teaches a method for forming an MgO film on a plasma display panel (Abstract) wherein hydrogen may be introduced during deposition in order to control crystal orientation and the introduction of oxygen reduces oxygen deficiency in the MgO film [0025].

Kawakusu teaches a method for forming an MgO film onto a substrate of an AC type plasma display panel while keeping the oxygen partial pressure within a range of 1×10^{-5} - 1×10^{-4} Torr (1.33×10^{-3} - 1.33×10^{-2} Pa) (Abstract).

Furuya teaches a method for forming an MgO film onto a plasma display panel wherein hydrogen is introduced to the chamber in order to obtain an MgO film of high grade. Hydrogen may be introduced at a partial pressure of 1×10^{-3} torr to 1×10^{-4} torr (1.33×10^{-2} Pa - 1.33×10^{-1} Pa) (Abstract, [0005]).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to incorporate hydrogen as suggested by Okuyama and Furuya into the process of Shintani in order to form a film of high grade and control crystal

Art Unit: 1792

orientation of the film while reducing oxygen deficiency. Also, it would have been obvious to maintain the oxygen partial pressure of Shintani within the specific range suggested by Kawakusu since this range would have reasonably been expected to be suitable for deposition of an MgO film on AC type plasma display panels.

Regarding Claim 28, it would have been obvious to one of ordinary skill to incorporate other MFC's into the apparatus of Shintani to accomodate gases other than oxygen, such as those suggested by Okuyama and Furuya, in order to improve the quality of the MgO film since Furuya teaches maintaining the additional gas (hydrogen) within a specific partial pressure range and the MFC of Shintani is suitable for maintaining a specific partial pressure of gas as shown with oxygen.

Thus, claims 21 and 28 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Shintani, Okuyama, Kawakusu, and Furuya.

5. Claims 21 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shintani (JP 11-080952) in view of Okuyama et al (JP 2001-243886), Kawakusu et al (JP 2000-277009), and Shiokawa et al (US 2003/0077972).

Shintani teaches a process for forming an MgO film onto a substrate of an AC type plasma display panel [0002] comprising: controlling a vacuum degree in the deposition room within a certain range, introducing oxygen into the deposition room, and controlling a partial pressure of the oxygen gas introduced to said deposition room within a certain range (Abstract). The oxygen partial pressure is kept within a certain range by controlling an amount of oxygen introduced into the deposition room while the deposition room is exhausted [0004].

Shintani does not teach introducing another gas including at least one gas selected from the group consisting of water vapor, hydrogen, carbon monoxide, and carbon dioxide; the partial pressure of the oxygen gas; or the partial pressure of the another gas.

Okuyama teaches a method for forming an MgO film on a plasma display panel (Abstract) wherein hydrogen may be introduced during deposition in order to control crystal orientation and the introduction of oxygen reduces oxygen deficiency in the MgO film [0025].

Kawakusu teaches a method for forming an MgO film onto a substrate of an AC type plasma display panel while keeping the oxygen partial pressure within a range of 1×10^{-5} - 1×10^{-4} Torr (1.33×10^{-3} - 1.33×10^{-2} Pa) (Abstract).

Shiokawa teaches introducing a small amount of water vapor to the chamber during deposition of a protective layer for PDPs, such as MgO, in order to reduce impurities and reduce static electricity. Shiokawa also teaches that MgO has the property of absorbing water and by introducing larger amounts of water vapor may degrade its performances [0006]-[0007]. The partial pressure of water vapor during MgO deposition should be 10 mPa or lower (1×10^{-3} Pa or lower) (Abstract, [0013], [0017]).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to introduce water vapor during deposition of the MgO film as suggested by Shiokawa in the process of Shintani, wherein the water is introduced within a range of partial pressure that will not degrade the performance of the MgO film,

Art Unit: 1792

in order to reduce impurities and static electricity while reducing oxygen deficiency as suggested by Okuyama. Also, it would have been obvious to maintain the oxygen partial pressure of Shintani within the specific range suggested by Kawakusu since this range would have reasonably been expected to be suitable for deposition of an MgO film on AC type plasma display panels.

Regarding Claim 28, it would have been obvious to one of ordinary skill to incorporate other MFC's into the apparatus of Shintani to accomodate gases other than oxygen, such as those suggested by Shiokawa, in order to improve the quality of the MgO film since Shiokawa teaches maintaining the additional gas (water vapor) within a specific partial pressure range and the MFC of Shintani is suitable for maintaining a specific partial pressure of gas as shown with oxygen.

Thus, claims 21 and 28 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Shintani, Okuyama, Kawakusu, and Shiokawa.

6. Claims 21 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shintani (JP 11-080952) in view of Okuyama et al (JP 2001-243886), Kawakusu et al (JP 2000-277009), and Shiokawa et al (US 2003/0077972) as applied above and further in view of Nishimura et al (US 2004/0135506).

The above cited references do not teach that the another gas is carbon dioxide or carbon monoxide or their partial pressures.

Nishimura teaches a method of manufacturing a PDP having a MgO protective layer wherein carbon dioxide or water vapor is introduced in order to form a PDP having lower discharge voltage, more stable discharge, higher luminance, higher efficiency,

Art Unit: 1792

and longer life. The amount of carbon dioxide being introduced is controlled to realize the desired effects (Abstract, [0037]-[0041]).

It would have been obvious to one of ordinary skill in the art at the time of invention to introduce carbon dioxide as suggested by Nishimura in the process of Shintani in order to form a PDP with lower discharge voltage and other desired effects. It would have been obvious to introduce carbon dioxide at the partial pressure suggested by Shiokawa since it is suitable for water vapor and carbon dioxide may be used as an alternative to water vapor. Also, one of ordinary skill would have expected similar results using carbon monoxide since it has similar structure and properties to carbon dioxide.

Regarding Claim 28, it would have been obvious to one of ordinary skill to incorporate other MFC's into the apparatus of Shintani to accommodate gases other than oxygen, such as those suggested by Shiokawa or Nishimura, in order to improve the quality of the MgO film since Shiokawa teaches maintaining the additional gas (water vapor) within a specific partial pressure range and the MFC of Shintani is suitable for maintaining a specific partial pressure of gas as shown with oxygen.

Thus, claims 21 and 28 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Shintani, Okuyama, Kawakusu, Shiokawa, and Nishimura.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory

Art Unit: 1792

obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 21 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 6 of copending Application No. 10/532672 in view of Shintani (JP 11-080952), Kawakusu et al (JP 2000-277009) and further in view of Furuya (JP 09-295894) or Shiokawa et al (US 2003/0077972) and Nishimura et al (US 2004/0135506). The '672 application teaches a method of manufacturing a PDP comprising every limitation of claim 21 except the metal oxide being magnesium oxide and the partial pressures of the oxygen gas and other gas (hydrogen, water vapor, carbon dioxide, carbon monoxide) being controlled within a certain range. Shintani teaches a method of manufacturing a PDP wherein an MgO film is formed as the metal oxide protecting layer. The partial pressure of the oxygen gas introduced is controlled within a certain range in order to obtain stable film performance over a long time (Abstract, [0002], [0004]). Kawakusu teaches a method for forming an MgO film onto a substrate of an AC type plasma display panel while keeping the oxygen

Art Unit: 1792

partial pressure within a range of 1×10^{-5} - 1×10^{-4} Torr (1.33×10^{-3} - 1.33×10^{-2} Pa) (Abstract).

It would have been obvious to one of ordinary skill in the art to control the partial pressure of the oxygen gas introduced in the process of the '672 application as suggested by Shintani in order to obtain stable film performance over a long time, wherein the range of Kawakusu may be used since this range would have reasonably been expected to be suitable for deposition of an MgO film on AC type plasma display panels. Furuya teaches a method for forming an MgO film onto a plasma display panel wherein hydrogen is introduced to the chamber in order to obtain an MgO film of high grade. Hydrogen may be introduced at a partial pressure of 1×10^{-3} torr to 1×10^{-4} torr (1.33×10^{-2} Pa - 1.33×10^{-1} Pa) (Abstract, [0005]). Shiokawa teaches introducing a small amount of water vapor to the chamber during deposition of a protective layer for PDPs, such as MgO, in order to reduce impurities and reduce static electricity and the partial pressure of water vapor during MgO deposition should be 10 mPa or lower (1×10^{-3} Pa or lower) (Abstract, [0013], [0017]). Nishimura teaches a method of manufacturing a PDP having a MgO protective layer wherein carbon dioxide or water vapor is introduced in order to form a PDP having lower discharge voltage, more stable discharge, higher luminance, higher efficiency, and longer life (Abstract, [0037]-[0041]). Thus, it would have been obvious to independently control the partial pressures of the other gas (hydrogen, water vapor, carbon dioxide, carbon monoxide) in the '672 application in order to achieve the desired effects of obtaining a MgO film of high grade, reducing static electricity, and forming a PDP having higher luminance.

This is a provisional obviousness-type double patenting rejection.

Response to Arguments

7. Applicant's arguments filed 5/8/2009 have been fully considered but they are not persuasive. Applicant argues that Shintani does not disclose "a gas introducing means for introducing at least one of a first gas containing oxygen ...and a second gas including at least one gas selected from the group..." or that the oxygen and other gases can be controlled independently. The examiner disagrees. Claim 27 recites "a gas introducing means for introducing at least one of a first gas...and a second gas". Thus, the claim only requires that the gas introducing means be capable of introducing either a first gas containing oxygen or a second gas. Shintani discloses a gas introducing means for introducing oxygen gas and thus meets the limitation. Okuyama [0025] provides evidence that the oxygen of Shintani inherently suppresses oxygen deficiency in the MgO film. The limitations involving the "partial pressure detecting means" and the "control means" similarly only require that the partial pressure be detected and the amount be controlled for either the first gas (oxygen) or the second gas and Shintani discloses a partial pressure detecting means and controlling means for oxygen.

Applicant argues that Shintani fails to disclose controlling oxygen and other gases independently and that Okuyama fails to cure this deficiency since Okuyama discloses that water, carbon monoxide, and carbon dioxide are contained in such a small amount that their presence does not affect the gas partial pressure. The examiner agrees that Shintani does not disclose controlling a second gas independently from the oxygen gas. However, Okuyama teaches that hydrogen may be used to control the

Art Unit: 1792

crystal orientation of the MgO film and oxygen may be used to reduce oxygen deficiency in the MgO film. Thus, it would have been obvious to introduce hydrogen into the process of Shintani in order to control the crystal orientation of the MgO film while reducing oxygen deficiency, wherein the partial pressure of each gas (oxygen and hydrogen) are independently controlled to achieved the desired effects.

Applicant argues that the double patenting rejection should be withdrawn since Shintani fails to disclose that the oxygen and other gases can be controlled independently. The examiner agrees that Shintani does not disclose independently controlling gases other than oxygen. However, Furuya, Shiokawa, and Nishimura teach introducing hydrogen, water vapor, and carbon dioxide at specific partial pressures in order to achieve desired effects, such as a high grade film, reduced static electricity, and higher luminance, respectively. Thus, it would have been obvious to independently control the introduction of each gas in the '672 application in order to achieve the desired effects.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Burkhart whose telephone number is (571)272-6647. The examiner can normally be reached on M-Th 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1792

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elizabeth Burkhart/
Examiner, Art Unit 1792

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1792